

Abstract of the Disclosure

- 5 Methods and apparatus for etching substrates such as silicon
wafer are provided. In one specific approach, a surface of the
substrate assembly is covered with a resist that is patterned to define
features to be etched. In this approach, the surface is then exposed to
a plasma in a plasma etcher so that surface areas not covered with the
10 resist are etched, while the thickness of the resist increases or etches at
a rate that is at least ten times slower than that of the exposed areas of
the surface. This etching process can be followed with a conventional
plasma etch. By combining the etching that increases the resist
thickness with the conventional etching of resist in which the resist
15 thins during etching, features having high aspect ratios can be etched.